A. Cover Sheet (Attach to front of proposal.)

1. Specify: X agricultural project or urban project X individual application or joint application

2. Proposal title -- concise but descriptive: Real-time Canal Flow Monitoring System and Canal Lining Project

3. Principal applicant -- organization or affiliation: Placer County Water Agency

4. Contact -- name, title: Mike Nichol

5. Mailing address: P.O. Box 6570, Auburn, California 95604

6. Telephone: (530) 823-4864

7. Fax: (530) 823-4884

8. E-mail: mnichol@pcwa.net

9. Funds requested -- dollar amount: $662,744

10. Applicant cost share funds pledged -- dollar amount: $662,744

11. Duration (month/year to month/year): September 2001 to November 2002

12. State Assembly and Senate districts and Congressional district(s) where the project is to be conducted: State Assembly District – 4; State Senate District – 1; Congressional District – 4.

13. Location and geographic boundaries of the project: Placer County, California.

14. Name and signature of official representing applicant. By signing below, the applicant declares the following:

__ the truthfulness of all representations in the proposal;
__ the individual signing the form is authorized to submit the application on behalf of the applicant;
__ the applicant will comply with contract terms and conditions identified in Section 11 of this PSP.

(printed name of applicant) (date)

(signature of applicant)

SECTION B

SCOPE OF WORK

This section presents a summary of the project, a statement of water issues, and the scope and objectives of the project. Also described is the merit, feasibility, and the monitoring and assessment of the project.

B.1 Abstract

The project consists of automating canal structures through the installation of twelve canal flow monitoring stations on Placer County Water Agency (PCWA) canals, which will allow flows to be continually monitored from a remote location. About 75 percent (87,850 ac-ft/yr) of PCWA water supply deliveries are raw water deliveries, distributed by canal. Approximately 40 percent (35,000 ac-ft/yr) of the water in the canals will pass through the twelve canal flow monitoring stations. It is estimated that approximately 4,867 acre-feet per year (ac-ft/yr) of water can be saved as a result of this project. The project will allow PCWA to monitor flows from a remote location to improve the efficient use of water by reducing canal spills.

The project also consists of continuing PCWA's canal lining project to line canals to reduce the unaccounted-for water occurring from canal infiltration.

B.2 Water Issues, Need, and Consistency with Other Plans

The efficient use of California's limited water supplies is a critical local, regional, and statewide water issue. PCWA utilizes surface water from the Yuba River, American River, and the Bear River as part of its water supply. The purpose of this project is to significantly increase water use efficiency by continually monitoring canal flow. This project will provide benefit to the Bay-Delta by ensuring that water diverted upstream is used efficiently.

This project involves the implementation of conditionally applicable efficient water management practices (EWMP) (Appendix V) number 5, *Line or pipe ditches and canals*, number 6, *Increase flexibility in water ordering by, and delivery to, the water users within operation limits*, and number 9, *Automate canal structures*. The unpredictable water supply and ever increasing demand on California's complex water resources have resulted in a coordinated effort by the California Department of Water Resources (DWR), agricultural water suppliers, farmers, the academic community, environmental organizations, and other interested groups to review and evaluate potential EWMPs and to determine which were feasible to achieve water conservation. This consensus-building effort resulted in the Memorandum of Understanding, which formalizes an agreement to implement these EWMPs and makes a cooperative effort to reduce the consumption of California's water resources.

This project is compatible with PCWA's 2000 UWMP (Brown and Caldwell, Urban Water Management Plan, 2000) and PCWA's ongoing efforts to achieve greater water use efficiency. PCWA's Board of Directors recognizes the importance of water management and conservation programs. PCWA's adopted rules and regulations include the general policy of the water system that states in part that the PCWA will operate and maintain the water system in an efficient and economical manner and distribute and supply water as fairly and equitably as possible. In August 1999, PCWA requested

assistance from DWR's Water Use Efficiency Office to assess water efficiency opportunities in Zone 1. The February 2000 DWR study (Appendix III) recommended that PCWA give attention to the 16% unaccounted-for water in Zone 1 and install a real time canal flow monitoring system. The study states that installing flow measurement stations on raw water canals and telemetering the information to a central location would allow faster response to and reduce spill situations and accurately record actual flows leaving the raw water distribution system. The project proposed for funding with this application is an integral step in implementing this recommendation.

PCWA is a member of the Water Forum. In the year 2000, the Water Forum finalized the *Water Forum Agreement* (Agreement) which contains seven major elements to meet its objectives. Water conservation is the fifth major element in the Agreement. The water conservation portion of the Agreement describes each water purveyor's commitments to implement BMPs. These BMPs were derived from the original MOU developed by the CUWCC, and then customized for the Water Forum conservation agreements prepared for the individual purveyors.

B.3 Project Nature, Scope, and Objectives

The project consists of installing twelve canal flow monitoring stations and continuing the canal lining program in the PCWA water system. Currently PCWA can only monitor canal flow by way of manual measurement. There is no way to measure flow on a continuous basis. This has resulted in repeated canal spills and significant unaccounted-for water system losses.

PCWA has an ongoing canal lining project that began in 1992 and resumed in 1996 through the present. During the program years, PCWA has averaged approximately 1.5 miles of canal lining per year. By the end of 2001 (Appendix IV), PCWA will have lined 9.5 miles of their 167 mile canal system (6% of the canal system).

The objectives of the project are to prevent canal overflows, efficiently use PCWA water through the ability to continually monitor and control canal flows to better match system demands from one remote station, and reduce the unaccounted-for water in the raw water canal system through canal lining.

B.4 Methods, Procedures, and Facilities

PCWA will use standard engineering, construction, and rate structure methods to implement this project. Standard purchasing and contracting procedures will be used to purchase project materials and contract a general contractor for material installation. The scope of the project consists of the following tasks.

1. Develop action plan. This involves determining the locations of flow monitoring devices, locations of remote monitoring stations and optimal canal lining locations.
2. Environmental documentation-CEQA.
3. Finalize flow monitoring purchase and installation contract documents.
4. Competitive bid.
5. Install flow monitoring devices.
6. Set up remote monitoring station.
7. Set up central computer station.
8. Prepare project report.

9. Continue canal lining program.

B.5 Schedule

A bar chart schedule is presented in Figure B-1. Table B-1 presents a quarterly expenditure projection.

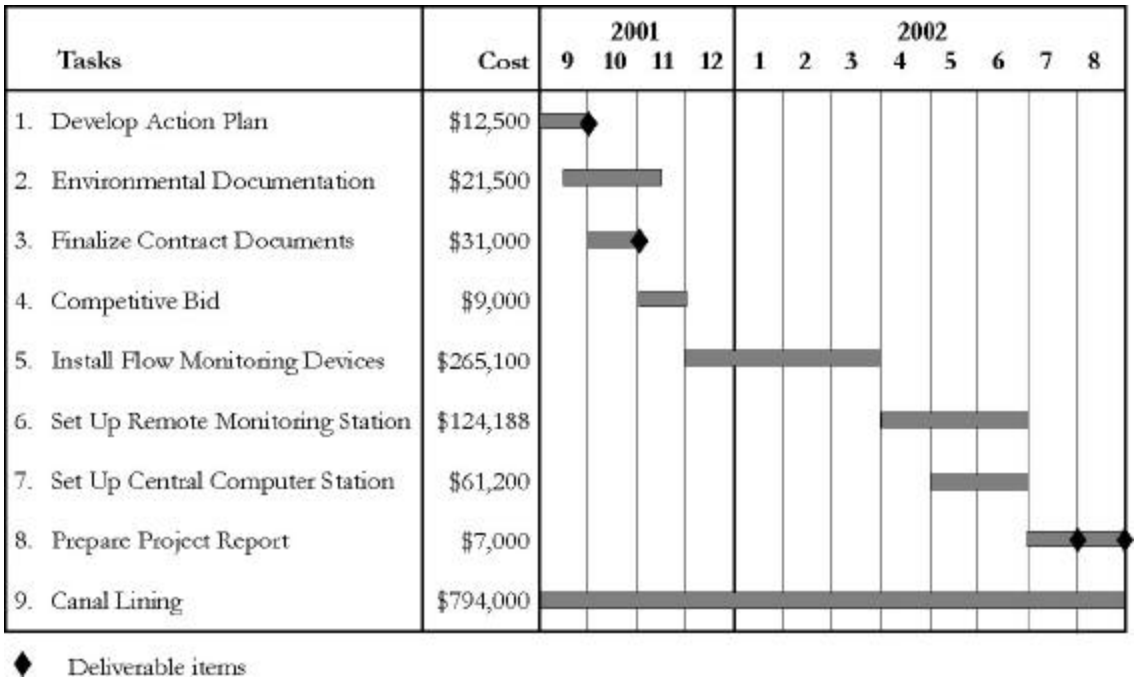

Figure B-1. Project Timeline

Table B-1. Quarterly Expenditure Projection

Quarter	Months	Expenditure, $
1	September-November	272,500
2	December-February	397,325
3	March-May	378,167
4	June-August	277,496

B.6 Monitoring and Assessment

PCWA will monitor and assess the before and after water use following the installation of flow monitoring devices and canal lining. A report will be issued after the completion of the project documenting the results. This will enable PCWA to determine the effectiveness and feasibility of this project by allowing them to compare pre-project flows to post-project flows. The information will be made available to the public through various outreach methods.

SECTION C

OUTREACH, COMMUNITY INVOLVEMENT, AND INFORMATION TRANSFER

This section describes outreach efforts that will be made by Placer County Water Agency (PCWA) during the project; training, employment, and capacity building potential the project provides; and the plan for disseminating information regarding the phases of the project.

C.1 Outreach Efforts

Because this project provides a regional-wide benefit, outreach efforts will not focus on any particular customer sector. Due to the nature of this project it is not appropriate nor practical to extend the project to specifically target disadvantaged communities within the County. There are no tribal entities particularly impacted by this project.

C.2 Training, Employment, and Capacity Building Potential

Once the project is underway, a contractor will be selected through competitive bidding to perform the actual flow monitor and remote monitoring server station installations. Once the 12 flow monitoring stations and remote monitoring server station is installed there will not be a need for any new employment.

C.3 Information Dissemination Plan

Information on the results of this project will be disseminated through the PCWA's public outreach program. PCWA operates an extensive public information program and associated schools program, which provide materials, speakers, and outreach activities to the general public.

Outreach activities will include publications and Web site development, public meetings, PCWA participation at community events, multimedia campaigns, interagency partnerships, corporate environmental fairs, professional trade shows, water conservation workshops and seminars and a speakers bureau.

Summaries of the results and benefits of this project will be developed by PCWA staff and made available to PCWA customers. Inserts will be included in billing mailer inserts, newsletters, and agency Web sites.

C.4 Letters of Notification

No letters of notification were necessary due to the nature of this project.

SECTION D

QUALIFICATIONS OF THE APPLICANTS, COOPERATORS, AND ESTABLISHMENT OF PARTNERSHIPS

The qualifications of the project manager, cooperators, and partners to be involved in the real-time flow monitoring program for Placer County Water Agency (PCWA) are discussed in this section. A description of PCWA is also included.

D.1 PCWA and the Project Manager

Placer County Water Agency is a public agency established in 1957 by a special Act of the California Legislature (Placer County Water Agency Act, Statutes of 1957, Chapter 1234). Its boundaries are the same as Placer County. Its governing body, a five-member Board of Directors, is elected by district voters. Each director serves a four-year term. Placer County Water Agency provides water to approximately 150,000 people in Placer County located in five separate retail zones. PCWA directly serves about 35,000 agricultural, municipal, and industrial connections in the cities of Auburn, Colfax, Loomis, Newcastle, Rocklin and many other small communities. PCWA also makes wholesale deliveries of water to San Juan Water District, the City of Roseville, and the City of Lincoln.

Placer County is located midway between the snow-fed Yuba/Bear and American Rivers, which cascade westward toward the Sacramento Valley. Running some 100 miles from east to west, the County is about 30 miles wide at either end and narrows to 8 miles at the mid section. Placer County covers an area of approximately 1,500 square miles that includes relatively level valley lands in its western portion and extends into the Sierra Nevada mountains to Lake Tahoe and the Nevada State line to the east. The County is located immediately northeast of Sacramento County, and about 120 miles northeast of the San Francisco metropolitan area. The area has cool and wet winters, and hot and dry summers. Based on the historical data (Western Regional Climate Center, 1999), Auburn's average daily temperature ranges from 38 to 93 degrees Fahrenheit. The historical annual average precipitation varies from 17 inches in the west portion of the County to 60 inches in the higher elevations in the eastern portion of the County.

The current main source of water is from the Yuba and Bear Rivers. The supply comes from Lake Spaulding and is purchased from Pacific Gas and Electric Company. Other sources of water include the American River, the Central Valley Project, and groundwater wells. Treated and untreated water use for the year 2000 was projected as 114,525 acre-feet (Brown and Caldwell, Urban Water Management Plan, 2000).

PCWA officials understand the complexities, interrelationships and importance to sustain reliable and affordable water and energy for Placer County. Current PCWA activities include, for example, involvement in issues affecting the Lake Tahoe and Truckee River system; the American River system; the Yuba/Bear Rivers system; the Central Valley Project and Bay/Delta system; watershed management collaborations; groundwater management; advocate for PCWA water entitlements; participant in electric deregulation and hydroelectric divestiture. PCWA officials are in close communication with local, regional, State and Federal officials plus private sector representatives

and members of the public and community on water and energy issues affecting Placer County's present and future needs

The project manager responsible for the real-time flow monitoring program will be Mike Nichol, the Senior Utility Resource Specialist. Mr Nichol's resume is included in Appendix I. Mr. Nichol has 9.5 years of experience associated with the PCWA raw water distribution system.

D.2 External Cooperators

No external cooperators will be utilized for PCWA's real-time flow monitoring program.

D.3 Partnerships Developed to Implement Project

No external partnerships will be developed for PCWA's real-time flow monitoring program.

SECTION E

COSTS AND BENEFITS

This section describes both the quantifiable and non-quantifiable costs and benefits associated with the project. Included is a detailed budget summary and breakdown and justification. An assessment of costs and benefits of the proposed project is also provided.

E.1 Budget Summary and Breakdown

Table 1 in Appendix II presents a detailed estimated budget that includes salaries and wages, fringe benefits, supplies, equipment, services and consultants, travel and other direct costs. The table is a breakdown of the estimated costs between PCWA-provided services and the services of the contractor.

The total cost of the project is $1,325,488. PCWA is requesting $662,744 from CALFED funding grants. The remaining fifty percent will be provided by PCWA through in-kind services and capital outlay.

E.2 Budget Justification

The budget estimate was prepared by Brown and Caldwell, a professional water engineering firm with extensive experience in managing and conducting water conservation projects. Brown and Caldwell is an approved consultant included in the California Urban Water Conservation Council's list of qualified consultants for the Year 2001.

E.3 Benefit Summary and Breakdown

This section lists the expected project outcomes and benefits of the proposed project.

a) Quantifiable Project Outcomes and Benefits. The goal of this project is to reduce canal system unaccounted-for water by 4,867 ac-feet per year. This is a benefit to PCWA in that it allows them to "stretch" their surface water entitlements from the Yuba, Bear, and American Rivers. It is also a benefit to CALFED in that it will allow upstream water in PCWA to be used more efficiently.

b) Non-quantifiable Project Outcomes and Benefits. There are many project benefits that can not be effectively quantified at this point in time. These are:

1) Improved Bay-Delta ecosystem. By decreasing unaccounted-for water within their service area, this project will allow PCWA to delay the date of need to use their full water right entitlements from the Yuba, Bear, and American Rivers. Therefore, in the interim, more water will be available to benefit the Bay-Delta ecosystem.
2) Economic savings to customers as a result of efficient use of water.

E.4 Assessment of Costs and Benefits

This section includes an assessment that summarizes the costs and benefits of the proposed project. The major analysis assumptions are listed and explained. This section also shows the present value of the quantified costs and benefits for the applicant and CALFED and summarizes non-quantified costs and benefits to the applicant and CALFED.

All quantified benefits and costs are expressed in year 2000 dollars using a six percent discount rate. A list of all major assumptions for the analysis of the quantifiable cost and benefits is as follows:

1. PCWA current water use is 114,000 ac-ft/yr of which 75% (87,850 ac-ft/yr) is canal flow (untreated water).
2. There is 30% (34,200 ac-ft/yr) unaccounted-for water in the canal system (MBK Engineers, Customer Water Use Study. November, 2000.) It is assumed that 5% unaccounted-for water is due to evaporation losses and cannot be reduced from this project. It is assumed that the remaining 25% unaccounted-for water (28,500 ac-ft/yr) is due to unmonitored and unlined canals. 10% (11,400 ac-ft/yr) unaccounted-for water is assigned to unmonitored canals and 15% (17,100 ac-ft/yr) unaccounted-for water is assigned to unlined canals.
3. The 12 real-time flow monitoring sites in this project will address 40% of the canal flow. This project has the potential of savings up to **4,560 ac-ft/yr** (40% of the 10% (11,400 ac-ft/yr) unaccounted-for water assigned to unmonitored canals).
4. By the beginning of this project PCWA will have 158, miles of canal of which 3 miles (2%) will be lined in this project. This project has the potential of saving up to **307 ac-ft/yr** (2% of the 15% (17,100 ac-ft/yr) unaccounted-for water assigned to unlined canals).
5. PCWA value of conserved water is $40/ac-ft.
6. The life of the benefits associated with real-time canal flow monitoring portion of this project is assumed to be 15 years.
7. The life of the benefits associated with canal lining is assumed to be 25 years.

A summary of the quantified costs and benefits to PCWA and CALFED are compiled in Table E-1. A summary of the non-quantified costs and benefits to PCWA and CALFED are compiled in Table E-2.

Table E-1. Summary of Quantified Costs and Benefits

Agency	Costs	Benefits	
	dollars	dollars	Water, ac-ft
PCWA	662,744	1,928,494	76,075
CALFED	662,744	None	76,075

Table E-2. Summary of the Non-quantified Costs and Benefits

Agency	Non-quantified costs	Non-quantified benefits
PCWA	None	• More efficient water use. • Decrease in unaccounted-for water within the system.
CALFED	None	• More efficient water use.

APPENDIX I

RESUMES

Mike Nichol

Work Experience

Placer County Water Agency - July 1989-Present
Increasing responsibility from Resident Engineer overseeing construction of a 15 mgd water treatment plant expansion and a 10 million gallon water storage tank to Director of Field Services responsible for canal operations and maintenance, treated water pipeline maintenance, warehouse and fleet maintenance. Over 9 years associated with Placer County Water Agency's raw water distribution system.

Guy F. Atkinson - April 1984-July 1989
Increased responsibility from Field Engineer to Project Engineer on dam sites in Utah and California, and a project in Virginia building islands.

Nevada Bureau of Mines and Geology - 1980-1982
Research Assistant performing Earthquake Hazard Mapping around Reno, Nevada.

Education

Master of Science: Geological Engineering from McKay School of Mines, University of Nevada-Reno, 1983.

Master of Business Administration: University of Nevada-Reno, 1983.

Bachelor of Science: Civil Engineering, University of the Pacific, 1980.

Certifications

Registered Professional Engineer.

State of California Dept of Health Services Grade 3 Water Treatment Plant Operator.

American Water Works Association Grade 3 Water Distribution Operator.

Miscellaneous

Member of AWWA Water Distribution Operator Certification Committee

APPENDIX II

BUDGET

Appendix II
Table 1. Canal Modernization Cost Estimate

Task	Sub-task	Number	PCWA				Contractor		Total Project
			Hours	Hourly Rate	Labor Dollars	ODCs	Labor Dollars	Material	**Dollars**
Task 1. Develop action plan			115	100	11,500	1,000			12,500
Task 2. Envrionmental documentation.			185	100	18,500	3,000			21,500
Task 3. Finalize contract documents			280	100	28,000	3,000			31,000
Task 4. Competitive bid			70	100	7,000	2,000			9,000
Task 5. Install flow monitoring devices			150	100	15,000	500	129,600	120,000	265,100
Task 6. Set up remote monitoring stations			100	100	10,000	500	113,688		124,188
Task 7. Setup central computer station			300	100	30,000	200		31,000	61,200
Task 8. Prepare project report			60	100	6,000	1,000			7,000
Task 9. Canal lining		3 miles	300	100	30,000	1,000	463,000	300,000	794,000
Total			1,560		156,000	12,200	706,288	451,000	1,325,488

Placer County Water Agency	50%	**662,744**
CALFED	50%	**662,744**

Appendix II

Table 2. Benefits and Costs Assessment

Discount Rate	6.00%
Present Value Year	2000
Cost of conserved water $/ac-ft=	40

				Benefits		Costs	
Calendar Year	Annual Canal Monitoring Savings ac-ft/yr	Annual Canal Lining Savings ac-ft/yr	Total Annual Savings ac-ft/yr	Avoided variable costs, $	Discounted benefits, $	Project costs, $	Discounted costs, $
2001	4,560	307	4,867	194,680	183,660	1,325,488	1,250,460
2002	4,560	307	4,867	194,680	173,265		
2003	4,560	307	4,867	194,680	163,457		
2004	4,560	307	4,867	194,680	154,205		
2005	4,560	307	4,867	194,680	145,476		
2006	4,560	307	4,867	194,680	137,242		
2007	4,560	307	4,867	194,680	129,473		
2008	4,560	307	4,867	194,680	122,145		
2009	4,560	307	4,867	194,680	115,231		
2010	4,560	307	4,867	194,680	108,708		
2011	4,560	307	4,867	194,680	102,555		
2012	4,560	307	4,867	194,680	96,750		
2013	4,560	307	4,867	194,680	91,274		
2014	4,560	307	4,867	194,680	86,107		
2015	4,560	307	4,867	194,680	81,233		
2016		307	307	12,280	4,834		
2017		307	307	12,280	4,560		
2018		307	307	12,280	4,302		
2019		307	307	12,280	4,059		
2020		307	307	12,280	3,829		
2021		307	307	12,280	3,612		
2022		307	307	12,280	3,408		
2023		307	307	12,280	3,215		
2024		307	307	12,280	3,033		
2025		307	307	12,280	2,861		
Total	68,400	7,675	76,075	3,043,000	1,928,494	1,325,488	1,250,460

APPENDIX III

DEPARTMENT OF WATER RESOURCES WATER CONSERVATION STUDY, 2000

APPENDIX IV

CANAL LINING 2001 SCHEDULE

2001 GUNITE/PROJECTS SCHEDULE

Revised: February 7, 2001

Zone I Gunite
Project #401500
G/L 331-0000- 850-850-
WF 0007385

Zone 3 Gunite
Project #401501
G/L 333-0000-

WF 0007508

Dates WF/Project #	Description/Location
Prep ½	
Shoot 1/3	Gunite Bowman Canal 54+00
7385/001	1160 Staggs Leap Lane, off Shadow Rock Ct
	75'x10'
Prep 1/8	Gunite Fiddler Green Canal
Shoot 1/9,10	Yamasaka Way/New Airport Rd
7385/002	300'x18
Prep 1/10	Gunite Boardman, Fiddler Green Diversion
Shoot 1/11,12,16	Marguerite Mine Rd/Hwy 49, 1000' d/s from tunnel @ Chevraux's Plant
7385/003	200' x 15
Prep 1/17	Gunite Fiddler Green Canal
Shoot 1/18	Behind Players Rest on Hwy. 49
7385/011	Approx 175'
Prep 1/17	Gunite Boardman Canal
Shoot 1/18,19	Gum Ln/ Pacific St @ Baldoni's old yard
7385/004	300'x16'
Prep 1/19	Gunite Shirland Canal
Shoot 1/22,23	Dump Rd/Pacific St 1000' d/s
7385/005	400'x10'
Prep 1/23,24	Gunite Shirland Canal, between Spills 7 & 8
Shoot 1/25,26	Private road off Shirland Track Rd
7385/006	Boardwall backfill 200' section
	Prep 100' u/s of wall and gunite 300'x9'
Prep 1/29-31	Gunite From Rock Springs Canal from Head of Maring Canal
Shoot 2/1,2,5,6,7	Private road off Newcastle Rd
7385/007	Remove side of concrete canal, approx 500' Shape and gunite

Prep 1/31 Gunite Boardman Canal
Shoot 2/1,2,5 Hoyer Ln/Indian Hill Rd
7385/008 Pothole and @ head of Newcastle Canal

Jan 31, Feb 1,2,5 Pour wall for new screens at head of Gaylord
111-8030-753-01

Prep 2/2 Gunite Upper Greeley, d/s Jamison Pipe Diversion
Shoot 2/5 Castle Creek Ranch Rd, Newcastle
7385/012 Approx 300'

Feb 5,6,7 Pour concrete walls for new screen's at Head of South Loop
111-8030-753-01

Prep 2/7,8 Gunite, Lower Greeley
Shoot 2/8,9,12 Hector Rd, Newcastle Rd
7385/009 Lower Greeley go u/s from new gunite , across from private drive 500'x12

Prep 2/12 Gunite Dutch Ravine Canal
Shoot 2/13 Access road into Marshall Spill/Taylor Rd
7385/010 Gunite from bridge 200 x 18/ u/s

Prep 2/14,15 Gunite Antelope Canal, Stat 142+50
Shoot 2/16,20 Off Plum Tree Lane, Penryn
7385/013 Two locations, 566 ft x 10 - Will need to remove 40ft of old gunite that is undermined

Prep 2/21 Gunite Antelope Stub
Shoot 2/22-23 Off Boulder Ridge Rd/Delmar Rd, Loomis
7385/014 Gunite 400 x 15

Prep 2/22,23 Gunite Antelope Canal, Stat 375+00
Shoot 2/24,26,27 Off Boulder Ridge Rd/Delmar Rd, Loomis, below Winter's house/property
7385/015 Gunite 1000 x 10

Prep 2/27 Gunite Caperton Canal
Shoot 2/28, 3/1 U/S before Spill #5, access thru gate off Clark Tunnel Rd, Penryn
7385/016 Gunite 400 x 15

Prep 3/1 Gunite Caperton Canal 465+00
Shoot 3/2,5 Off Caperton Ct/Sierra College, Loomis u/s of fence/meter box and service box
7385/017 Gunite 257 x 7

Prep 3/2 Gunite Caperton Canal,
Shoot 3/5,6 Off Caperton Ct/Sierra College, Loomis, d/s of Lincoln Spill
7385/018 Gunite 420 x 12

Prep 3/7	Gunite Red Ravine Canal, Sta 176+00
Shoot 3/8,9	Off Penryn Estates Rd/Penryn Rd, Penryn
7385/019	Gunite 445 x10
Prep 3/9	Gunite Red Ravine Canal Sta 190+00
Shoot 3/12,13	at 7505 Penryn Estates Rd, Penryn
7385/020	Gunite 227 x 12
Prep 3/12	Gunite Red Ravine Canal Sta 268+60
Shoot 3/13	Off Moonshine Road, u/s of tall flume
7385/021	Gunite 150 x6
Prep 3/14,15	Gunite Boardman Canal Sta 152+50
Shoot 3/16,19	Off Brennans Rd, Newcastle, u/s of Brennans Road
7385/022	Gunite 230 x17
Prep 3/19	Gunite Boardman Canal, Sta 183+88
Shoot 3/20,21	Off Stagecoach Rd/King Rd, Loomis
7385/023	Gunite 250 x 18
Prep 3/20	Gunite Ferguson Canal, Sta 27+50
Shoot 3/21,22	Off Laird Rd/Horsehoe Bar Rd, Loomis
7385/024	Gunite 370 x16
Prep 3/23,26,28	Gunite Boardman Canal, Sta 313+26
Shoot 3/29,30	Off Vista Dr/Horseshoe Bar Rd, Loomis
7385/025	Gunite 370 x 16
Prep 3/30 4/2	Gunite Boardman Canal, Sta 557+00
Shoot 4/2,3	Off Sierra College Blvd, Loomis, u/s of Sierra Blvd
7385/026	Gunite 373 x 14

APPENDIX V

EFFICIENT WATER MANAGEMENT PRACTICES

Efficient Water Management Practices by Agricultural Water Suppliers in California from the Memorandum of Understanding of the Agricultural Water Management Council

GENERALLY APPLICABLE EFFICIENT WATER MANAGEMENT PRACTICES

1. Prepare and adopt a Water Management Plan using as a guideline Exhibit B of this Memorandum of Understanding for Agricultural Water Suppliers.
2. Designate a Water Conservation Coordinator.
3. Support the availability of water management services to water users.
4. Where appropriate, improve communication and cooperation among water suppliers, water users, and other agencies.
5. Evaluate the need, if any, for changes in policies of the institutions to which the water supplier is subject.
6. Evaluate and improve efficiencies of water suppliers pumps.

CONDITIONALLY APPLICABLE EFFICIENT WATER MANAGEMENT PRACTICES

1. Facilitate Alternative Land Use.
2. Facilitate use of available recycled water that otherwise would not be used beneficially, meets all health and safety criteria, and does not cause harm to crops or soils.
3. Facilitate the financing of capital improvements for on-farm irrigation systems.
4. Facilitate voluntary water transfers that do not unreasonably affect the water user, water supplier, the environment, or third parties.
5. Line or pipe ditches and canals.
6. Increase flexibility in water ordering by, and delivery to, the water users within operational limits.
7. Construct and operate water supplier spill and tailwater recovery systems.
8. Optimize conjunctive use of surface water and groundwater.
9. Automate canal structures.

OTHER EFFICIENT WATER MANAGEMENT PRACTICES

1. Water measurement and water use report.
2. Pricing or other incentives